

We claim:

1. A process for preparing nanocrystalline lithium titanate
5 spinels, which comprises reacting lithium hydroxide and a titanium alkoxide at elevated temperature in a reaction mixture which forms water of reaction.
2. A process for preparing nanocrystalline lithium titanate
10 spinels as claimed in claim 1, wherein the reaction mixture which forms water of reaction comprises an alcohol or a glycol ether and a carboxylic acid.
3. A process for preparing nanocrystalline lithium titanate
15 spinels as claimed in claim 1 or 2, wherein the reaction is carried out at from 50 to 180°C and a pressure of from 0.1 to 3 bar.
4. A process for preparing nanocrystalline lithium titanate
20 spinels as claimed in any of claims 1 to 3, wherein the molar ratio of titanium alkoxide to the first component for the reaction forming water of reaction is from 0.8:1 to 50:1.
5. A process for preparing nanocrystalline lithium titanate
25 spinels as claimed in any of claims 1 to 4, wherein the molar ratio of the first component to the second component for the reaction forming water of reaction is from 3:1 to 0.95:1.
6. A process for preparing nanocrystalline lithium titanate
30 spinels as claimed in any of claims 1 to 5, wherein the spinels are sintered at from 350 to 700°C.
7. A process for preparing nanocrystalline lithium titanate
35 spinels as claimed in any of claims 1 to 6, wherein the particle size is from 1 to 200 nm.
8. A nanocrystalline lithium titanate spinel which has a
40 particle size of from 1 to 200 nm and is prepared as claimed in any of claims 1 to 7.
9. The use of a nanocrystalline lithium titanate spinel prepared
45 as claimed in any of claims 1 to 7 as anode material for rechargeable lithium ion batteries.

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10. A rechargeable lithium battery comprising nanocrystalline lithium titanate spinels prepared as claimed in any of claims 1 to 7 as anode material.

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